United States
Department of
Agriculture

Forest Service

Forest Pest
Management

Davis, CA

SUMMARY OF RECOMMENDATIONS - NATIONAL STEERING COMMITTEES FOR APPLICATION OF PESTICIDES

FPM 91-4
MARCH 1991

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NATIONAL STEERING COMMITTEES FOR APPLICATION OF PESTICIDES

For Presentation at the Aerial Application Technology Workshop, North American Forest Insect Work Conference

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Prepared by:

John W. Barry

USDA Forest Service
Forest Pest Management
2121C, Second Street
Davis, CA 95616
(916) 758-4600

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INTRODUCTION

The Chief, USDA Forest Service established four national steering committees in 1988 to identify needs and to recommend aerial application testing of pesticides. Four committees were established under the chair of Jack Barry, Washington Office, Forest Pest Management:

1. National Steering Committee for Application of Pesticides - Gypsy Moth and Other Eastern Defoliators;

2. National Steering Committee - Management of Seed and Cone Insects;

3. National Steering Committee for Application of Pesticides - Western Defoliators; and

4. National Steering Committee for Application of Pesticides - Vegetation Management.

Draft operating guidelines for these committees (Appendix A) covers membership, purpose, procedures, and responsibilities. The operating guidelines are supplemented as needed by the individual committees.

The scope of the committees' charge began to change during the second round of meetings. Ground application of pesticides was added to the scope of the committees, and the Seed and Cone and Vegetation Management Committees further recommended that the scope of their respective committees also be expanded to include all methods of pest management. I anticipate further changes as the FPM steering committee process evolves to meet line and staff officer needs.

The process of identifying national needs for direct control of forest pests provides a useful tool for inviting project proposals. When the process is combined with management priorities, there exists a national basis and rationale for funding projects. Priorities, established by a national group of scientists, thus are used by management in deciding how best to allocate resources.

Sources of funds to support approved projects depend upon the type of project - research, special or technology development projects, or operations. Specific sources could include funds from Forest Service operating budgets, special projects, and industry. States and universities also are potential contributors respectively, through cost sharing and contribution of indirect costs.

The committee reports, prepared after each meeting, are joined together annually in a Forest Pest Management report. To date three reports have been prepared as follows:

1. USDA Forest Service. 1990. National Steering Committees for Aerial Application of Pesticides, Report No. 1; FPM 90-3. Forest Pest Management, Davis, CA

2. USDA Forest Service. 1990. National Steering Committees for Aerial Application of Pesticides, Report No. 2; FPM 90-4. Forest Pest Management, Davis, CA

3. USDA Forest Service. 1991. National Steering Committees for Aerial Application of Pesticides, Report No. 3; FPM 91-3. Forest Pest Management, Davis, CA

Copies of these reports and/or individual committee reports are available from Jack Barry, USDA Forest Service, 2121C Second Street Suite 102, Davis, CA, 95616.

STEERING COMMITTEE MEMBERSHIP

Steering committee membership is represented by scientists from the USDA Forest Service - National Forest System, Research, and State and Private Forestry; Canada; States; Universities; and industry. Collectively members bring forth needs and the committee sorts the list in terms of national importance. The broad-based membership approach promotes cooperation, and empowers members and their constituents in the process of advancing application technology. A broad sector then has important input into the process.

A list of committee members by committee is provided in the Appendix B to this report.

SUMMARY OF CURRENT COMMITTEE RECOMMENDATIONS

Following are recommendations extracted from recent steering committee reports. The recommendations are reviewed at least annually, progress noted, and recommendations revised as needed.

NATIONAL STEERING COMMITTEE FOR APPLICATION OF PESTICIDES - GYPSY MOTH AND OTHER EASTERN DEFOLIATORS.

Current Recommendations

A. Laboratory and/or Investigations

1. **Investigate canopy architecture of eastern deciduous forests (shape, sub-canopies, density, leaf-area index, etc.) for input and enhancement of FSCBG aerial spray model.**

   High - Mike McManus

2. **Investigate enzyme link immunosorbant assay (ELISA) or other techniques for rapid on-site determination of tank mix potency.**

   High - Pat Shea

3. Develop priority list of wind tunnel tests needed for undiluted formulations of Bacillus thuringiensis (B.t.) as determined by State/Federal cooperators. Conduct physical property/wind tunnel tests for priorities 1-10.

High - Dick Reardon

4. Investigate feasibility of using virus to manage pine sawfly.

Medium - Michelle Frank

5. Investigate use and timing of granular verticillium to control pear thrip.

Medium - Michelle Frank

6. Screen tank mixes for effects on automobile paint surfaces.

B. Field Tests

1. Conduct field tests of lower doses and lower volumes of Dimilin.

High
Priority 5 - Win McLane

2. Evaluate utility of FSCBG aerial spray model to predict canopy penetration model by comparing deposition predictions to observed predictions in eastern deciduous canopies.

High - NEFAAT

3. Evaluate canopy penetration and spray drift of B.t. spray applied to control gypsy moth in western deciduous forests and compare field results to model predictions.

High - Jack Barry
Ken Bentson

4. Conduct B.t. efficacy tests and develop guidelines for using hydraulic sprayers to control gypsy moth.

Medium - NA
R-8

C. Demonstrations

Demonstrate utility of the gypsy moth phenology computer-base model supported by Omni-Data weather monitoring system to predict application timing.

High - Steve Munson

D. Equipment, Models, and Technology Development

1. Investigate and demonstrate weather monitoring systems to support gypsy moth control projects and plan for personnel training in use of the systems.

High - Harold Flake

2. Evaluate capability of FSCBG aerial spray model to predict penetration of a B.t. spray into an oak canopy in Western U.S.

High - Jack Barry
Bruce Grim

3. Review aircraft guidance and treatment block marking methods and publish a report that outlines equipment, methods, and advantages and disadvantages of each method.

High - MTDC

4. Conduct airport trials to verify randomly selected AGDISP swath width predictions reported in the 1990 NA/FPM Report Swath Width Evaluation. Make AGDISP model runs for additional aircraft.

Low - Harold Flake
Dan Twardus
Dick Reardon

E. Administrative

1. Pesticide tank mix recommendations for 1991 gypsy moth suppression programs are as follows:

Product	BIU/Acre	Volume/Acre	Undiluted
Thuricide 32LV	16	96 - 128 oz.	NO
Thuricide 48LV	16 to 30	"	16 to 30 BIU
SAN 415 (NRD-12)	"	"	"
Dipel 6AF	"	"	"
Dipel 8AF	"	"	"
Foray 48B	"	"	"

Product	AI/Acre	Volume/Acre	Undiluted
Dimilin 25W	0.03 lbs.	96 or 128 oz.	NO

Footnotes:

For diluted B.t. applications apply at 96 or 128 oz./acre. Undiluted applications should be no less than 40 oz. of B.t. per acre.

For eradication use 2 or more applications of B.t. 5 to 7 days apart.

Stickers can be added to B.t. formulations if added protection is needed. Use 2% by volume or Bond, Plyac or NuFilm 17. Do not use Bond with Foray.

2. **Conduct a workshop to develop standard spray aircraft contracting guidelines and specifications for aerial spraying in the East.**

   High - Dan Twardus
   Harold Flake

3. **Maintain contact with EPA to encourage more flexibility on registration of minor use and environmentally acceptable pesticides.**

   High - WO/FPM

4. **Establish a gypsy moth pheromone ad hoc committee composed of FS, APHIS, industry, State, and university representatives.**

   Medium - WO/FPM

5. **Continue to encourage development of working relationship amongst Canadian and U.S. investigators who are pursuing gypsy moth research.**

   High - WO/FPM
   WO/FIDR
   NA/AIPM

6. **Determine if there is a problem as expressed by members of the committee that poor pilot skill and low quality of application is contributing to poor control of gypsy moth. If there is a problem it might involve one or more factors to include contract specifications, unrealistic expectations, poor communications, inadequate quality control and monitoring, weather, treatment timing, untrained contract supervisors, etc.**

   High - Dan Twardus

7. **Support applied research on monitoring gypsy moth populations and on timing of treatment.**

   High - WO/FIDR
   WO/FPM

Current Recommendations

A. Laboratory/Field Studies

1. **Develop methods to monitor major seed and cone insects, and to predict population levels and treatment timing.**

   High Priority (1) - M. Haverty
   C. Niwa

2. **Study and establish relationship of pest levels to subsequent damage by major seed and cone insects.**

   High Priority (2) - M. Haverty
   C. Niwa

3. **Develop toxicity data for seed bug and establish lower thresholds.**

   High Priority (3) - G. DeBarr

B. Field Tests

1. **Conduct field tests of pyrethroids in Douglas-fir orchards:**

   a. **Evaluate pyrethroids as alternatives to systemic insecticides for control of gall midge.**

      High Priority (1) - M. Haverty

   b. **Evaluate other pyrethroids as alternatives to Asana for control of cone worm and chalcid.**

      High Priority (1) - M. Haverty

2. **Conduct field tests of undiluted B.t. to control target species of** <u>Dioryctria</u> **in eastern and western seed orchards.**

   Low Priority - M. Haverty
   G. DeBarr

C. Demonstrations

1. **Demonstrate utility of FSCBG aerial spray model to plan an aerial spray project in a western and eastern seed orchard.**

   High Priority (1) - J. Barry

2. **Demonstrate understory burning strategy to control white pine cone**

beetle in Ohio, Pennsylvania, and North Carolina white pine seed orchards.

High Priority (1) - L. Barber

3. **Demonstrate feasibility of single-tree treatment using a helicopter.**

Low Priority - MTDC

D. Cooperative Field Projects

The following projects have been funded and are scheduled to be conducted in 1990-1991. Assigning priorities to these funded projects was not deemed to be applicable. No other cooperative field projects are recommended as results of 1989 field tests are unknown at this time.

1. **Conduct a field test (replicated) in two or more southern pine seed orchards to control Dioryctria using undiluted B.t. applied by aircraft at 30 BIU per acre.**

L. Barber

2. **Conduct field tests (replicated) in two Oregon seed orchards using a regime of pesticide and number of treatments, applied by both aircraft and ground sprayers to control a Douglas-fir pest complex.**

R. Sandquist

3. **Conduct a project to evaluate feasibility of a pheromone to disrupt mating of Dioryctria disculsa.**

L. Barber

4. **Conduct a field project to evaluate stem implants of acephate, metasystox, and dicrotophos to control seed and cone insects in R-1 and R-8.**

R. Stipe
J. Negron

5. **Continue field evaluation of Capture (a synthetic pyrethroid) to control seed and cone insects.**

L. Barber

E. Equipment and Technology Development

1. **Develop a tree injection of infusion method that is safe, economical, and minimizes tree damage. High resin levels in pines present a tough problem.**

High Priority - WO/Engr.

2. Conduct an engineering study to evaluate both ground and aerial equipment for dispersal of pheromones in fibers, capsules, flakes, pellets, and granules. The study, to be conducted in close coordination with FIDR should evaluate existing hardware and identify need for hardware development.

Medium Priority (1) - WO/Engr.

3. Evaluate existing or develop new hardware for applying aerial sprays to single or clustered trees. Seed collection trees in wild stands seldom can be treated effectively from the ground. Aerial application currently is the only practical method of treatment. A helicopter spray system is needed. This may simply involve testing or modifying an existing system.

Medium Priority (2) - WO/Engr.

F. Information Management

Prepare a reference of labels and Material Safety Data Sheets (MSDS) on pesticides registered to control seed and cone insects.

High Priority - J. Barry

G. Administrative

1. Develop and maintain seed and cone insect management skills in Regions and NA.

High Priority (1) - J. Space

2. Contact EPA and discuss need to classify pesticides used for seed and cone insect control as non-food crop and relaxation of pheromone pesticide registration requirement.

High Priority (2) - G. DeBarr

3. Determine allocation of resources at Regions (TM and FPM), NA, and Stations for managing seed and cone insects; and to communicate to decision makers need for more research on reducing losses from seed and cone insects.

High Priority (3) - J. Space

4. Develop an IPM decision making approach to manage seed and cone insects.

High Priority (4) - M. Haverty

5. Encourage evaluation and testing of new pesticides and biorational methods to control seed and cone insects, recognizing the

susceptibility of dimethoate (Cygon) and azinphos-methyl (Guthion) to de-registration.

High Priority (5)

6. Invite a seed and cone scientist from academia to join this committee.

Medium Priority (1) - J. Barry

7. Recommend that persons who develop seed and cone insect project proposals submit their proposals to this committee for constructive review.

Medium Priority (2)

H. Operating Guidelines

1. Expand scope of this committee to include all methods of managing seed and cone insects and propose that the committee name be changed to National Steering Committee - Management of Seed and Cone Insects.

2. Conduct of field tests (experiments) in seed orchard and wild stand collection sites shall follow applicable parts of Recommended Guidelines for Designing Field Experiments of Insecticides for Control of Insect Defoliators by Aerial Application drafted by Pat Shea 8-8-89.

NATIONAL STEERING COMMITTEE FOR APPLICATION OF PESTICIDES - WESTERN DEFOLIATORS

Current Recommendations

A. Laboratory and/or Investigations

1. Pursue laboratory testing of new Bacillus thuringiensis (B.t.) strains.

New strains of B.t. that may have significantly higher efficacy against western defoliators should be tested in the laboratory in cooperation with industry, e.g. Novo and Abbott.

PNW

2. Develop a plan to obtain data on impact of B.t. on non-target organisms.

There is only limited information in this area and the committee recommends that a plan be developed by PNW to obtain these data. The plan would include field inventory, laboratory evaluations, field testing, and methods to fund and accomplish this work.

PNW

3. **Explore techniques for rapid bio-assay of B.t.**

ELISA (enzyme link immunosorbant assay) techniques are needed for rapid bio-assay of B.t. in the field. Capabilities exist at University of California, Davis (UCD) and Entotech, Inc., (Novo), Davis, CA. The committee recommends that a proposal be prepared and funds be made available with Pat Shea taking the lead.

PSW

4. **Develop, identify, and evaluate improved carriers for TM Biocontrol-1.**

The current tank mix of field grade molasses, Orzan LS, and water handled well during January 1991 airport trails at Davis, CA. Atomization from Micronair atomizers and flat fan nozzles appeared to be excellent; however data are still being evaluated. Product Coordinators (Jim Hadfield for TM Biocontrol-1 and Dick Reardon for Gypchek) are cooperatively developing a 5-year plan that will lead to operational use of these insecticides. Investigating improved carriers and cooperation with Canada on carrier development should be part of the plan. The committee also recommends that the Product Coordinators seek cooperation from the private sector in developing improved carriers, especially Gypchek carriers as the potential use of Gypchek far exceeds that of TM Biocontrol-1.

R-6
NA
PNW

5. **Determine evaporation rates and physical properties of microbial tank mixes.**

MTDC is soliciting for a contractor to determine evaporation rates and physical properties of pesticide tank mixes used by the FS. Rates will be determined as funds become available; however MTDC should request funding pursuant to this recommendation.

MTDC

B. Field Tests

1. **Field test TM Biocontrol-1 including lower doses, and with improved carriers as they become available. Priority is given to testing methods of controlling Douglas-fir Tussock Moth (DFTM) as the insect is in current outbreak.**

PNW

2. **Conduct mating disruption tests using pheromones against western spruce budworm.**

PNW

3. Conduct cooperative field tests of several dosages (0.5, 1, and 2 ounces per acre) of Dimilin against DFTM and study non-target effects compared to non-target effects of B.t.

PSW

C. Pilot Projects and Cooperative Field Tests/Pilot Projects

1. Conduct cooperative pilot test of TM Biocontrol-1, double (spring and summer treatments) against new, low level, and sub-outbreaks of DFTM.

PNW

2. Conduct mating disruption tests using pheromones against DFTM.

PNW
R-4
R-6

3. Conduct cooperative field tests/pilot tests of new strains of B.t. against western spruce budworm as they are recommended by PNW (Project 4502).

PNW
R-6

4. Conduct pilot test of B.t. against new and low level outbreaks of DFTM.

R-6

5. Conduct pilot test of Dipel 8L and Dipel 8AF applied at 32 ounces per acre to control western spruce budworm.

Abbott Laboratories

D. Equipment, Models, and Technology Development.

1. Evaluate the utility of the computer model Computer Assisted Spray Productivity Routine (CASPR) on a pilot or operational project.

R-4
WO/FPM
MTDC

2. Evaluate existing aircraft guidance systems and provide recommendations for operational deployment.

MTDC

3. Evaluate and recommend methods of sampling ultra low volume (ULV) sprays on pilot and operational projects.

MTDC

4. **Update and add spray nozzle specification data to the Program WIND aerial application equipment handbook.**

MTDC

5. **Determine physical properties and drag coefficients of substances.**

MTDC

6. **Coordinate complex terrain modeling with Global Positioning System (GPS), Geographic Information Systems (GIS), and expert system activities being developed by the FS.**

MTDC

E. Information and Administrative Management

1. **Plan and conduct multi-year monitoring, analyses, and data management of spray treatments.**

R-3
R-4
R-5
R-6

The data and information are needed for cost/benefit analyses by resource managers. We need to know duration of carryover benefits of treatments and tree growth information. Even short term benefits of treatment cannot be determined during the first year of treatment. For cost/benefit information and other economic analysis, the benefits or lack of benefits over 3 to 5 year periods should be established and recorded. This includes the R-6 Meacham Pilot Project conducted in 1988. Monitoring during 1989 shows that the benefits of treatment were carried over from 1988 to 1989. Monitoring the R-3 Jemez Mountain control project showed that the western spruce budworm was kept suppressed for 5 years. This is valuable information in developing control strategies and in calculating cost/benefits for future control operations.

2. **Develop guidelines for conduct of wind tunnel and airport spray characterization trials.**

WO/FPM

3. **Pursue microbial research.**

WO/FIDR
WO/FPM
PNW

The committee recommends maintaining and increasing support of microbial and pheromone research for improved pest monitoring and suppression.

4. **Evaluate and revise current standards for determining successful control.**

FIDR/WO
FPM/WO

5. **Registered B.t. formulations.**

Currently registered B.t. products for DFTM and western spruce budworm, and their respective undiluted application rates for 16 BIU's per acre are listed below.

Product	Application Rate	Registration DFTM[1].	WSBW[2].
Thuricide 32LV	64 oz	X	X
Thuricide 48LV	43 oz	X	X
SAN 415	64 oz	X[3].	X[3].
Dipel 6L	43 oz	X	X
Dipel 8L	32 oz	X	X
Dipel 6AF	43 oz	X[3].	X[3].
Dipel 8AF	32 oz	X[3].	X[3].
Foray 48B	43 oz	X[3].	X[3].

1. DFTM = Douglas-fir tussock moth.
2. WSBW = Western spruce budworm
3. Not registered for forestry use in California.

6. **The committee strongly endorses assignment of Product Coordinators for TM Biocontrol-1 and Gypchek.**

7. **The committee expresses concern over apparent failure of the DFTM pheromone early warning system to detect DFTM build-up in Idaho.**

Current Recommendations

A. Administration

1. **Broaden charter of this committee to include all methods of vegetation management and review geographic representation on the committee in view of expanded charter; and change committee title to "National Steering Committee For Managing Vegetation on Forest and Range Lands".**

Priority 1 - Chief

2. **Involve R-3 as a partner with R-4 in developing a risk assessment for all herbicides registered for forest and range use.**

Priority 1 - Chief

3. **Lift the deferral on aerial application of herbicide.**

Priority 1 - Chief

4. **Identify Forest Health as a priority research program.**

Priority 1 - Chief

5. **Develop a program or initiative to inform the public on how the Forest Service manages national forest and range lands. The program would include vegetation management. The audience would include general public, to include students of all grades; state and private cooperators; and other Federal agencies.**

Priority 2 - Chief

6. **Clarify relationship of Forest Service and State pesticide certification program.**

Priority 2 - WO/FPM

7. **Evaluate opportunities to cooperate with New Mexico State University in spray technology, vegetation management, and biodiversity and ecosystem impact research.**

Priority 3 - WO/FPM

B. Training and Technology Transfer

1. **Analyze national, regional, and area needs for herbicide-use training to include safety, material safety data sheets, State requirements, certification training, treatment prescriptions, and theory vs practice.**

Priority 1 - WO/FPM & TM
Regions
NA

2. **Encourage Forest Service support and participation of the Western Regional Coordinating Committee (WRCC-51) and Southern Regional Information Exchange Group on Pesticide Application Technology (SRIEG No. 29).**

Priority 2 - WO/FPM

C. Cost Benefit Information and Decision Support Systems

1. **Develop a decision support system for vegetation management prescriptions.**

Priority 1 - WO/TM

2. **Develop a national economic threshold model or model shell.**

Priority 2 - WO/TM

3. **Develop a national system to monitor vegetation management projects at the forest level, from planning, to treatment, to achievement of the desired result (e.g. tree crown closure).**

R-6/FPM

D. Environmental and Safety Needs

1. **Develop in cooperation with the Regions a computerized national risk assessment program.**

Priority 1 - WO/FPM

2. **Develop a national system to gather worker safety information for non-chemical methods of vegetation management.**

Priority 1 - WO/FPM

3. **Develop a system to collect, catalogue, and retrieve environmental fate data.**

Priority 1 - WO/FPM

4. **Support forestry worker exposure and safe work method studies, through NAPIAP, special project, and program funds.**

Priority 1 - WO/FPM

E. Biodiversity and Ecosystem Impact

1. **Develop a national policy on biodiversity, to include defining biodiversity, identifying WO staff responsibilities, and developing a national action plan.**

Priority 1 - Chief

2. **Support and initiate long-term studies (5-20 years) to monitor various vegetation management alternatives in the Lake States, Southwest, and Southeast.**

Priority 1 - WO/FPM

3. **Incorporate biodiversity in the PSW, R&D program and other applicable R&D programs.**

Priority 1 - Research

4. **Establish and maintain a bibliography and library of information (published papers, reports, "fugitive" literature, etc.) on vegetation management research and control projects.**

Priority 1 - WO/FPM

F. Application Technology and Equipment

1. **Evaluate use of the FSCBG and AGDISP aerial spray models for ground applications.**

   Priority 1 - WO/FPM

2. **Review and update as appropriate the WO/Engineering (MTDC) publications: Catalogue Revegetation Equipment (Feb 1980) and Equipment For Reforestation and Timber Stand Improvement (Oct. 1980).**

   Priority 2 - WO/Engr.

SUMMARY

Four national steering committees have been established by the Chief, USDA Forest Service for pesticide application. Since 1988 the committees have met at least annually to identify needs and other issues related to testing and advancing our ability to manage forest defoliators, seed and cone insects, and vegetation using direct control technology. Committee membership is represented by scientists from the USDA Forest Service, USDA - Animal Plant Health Inspection Service, Canada, States, Universities, and industry. The steering committee approach has been successful in identifying national needs, encouraging proposals to address the needs, and assisting management by ranking proposals for funding allocations. Cooperation from a broad sector of the forest pest management community is essential to maintaining the steering committee process.

DRAFT OPERATING GUIDELINES

OPERATING GUIDELINES FOR NATIONAL STEERING COMMITTEES CONSIDERING FIELD TESTS AND PILOT PROJECTS FOR THE AERIAL APPLICATION OF PESTICIDES

MEMBERSHIP: Committees members should be nationally recognized research, developmental, and applied scientists as well as natural resource professionals drawn from the Forest Service, other Federal agencies, States, universities, and industry.

PURPOSE: The committees' primary tasks are to analyze, identify, and recommend field and pilot testing needs for application of pesticides. Needs include those associated with pesticides, application systems, techniques, and strategies that influence the FS's and State cooperators ability to use pesticides safely, effectively, and in an economically, and environmentally acceptable manner.

PROCEDURES:

The committees shall:

- meet at least annually, preferably during late summer or early fall to **recommended** projects for management approval;
- focus on sound science that may lead to improving pesticide application consistent with its stated purpose;
- assign priorities to testing needs agreed to by the committee;
- review data and progress of field tests, pilot tests, and other projects;
- suggest organizations or individuals who might pursue recommended projects;
- take action to address needs such as development of guidelines for field test and pilot projects, database formats, and literature studies;
- establish sub-committees to pursue single issues such as review of laboratory and field test data.

The members shall:

- determine pesticide application and related needs within their geographical, administrative or organizational area prior to each meeting.

- be cognizant of all appropriate Region/Area/Station/State/cooperator needs.

- bring to the meeting needs that have been discussed with line officers and staff.

- represent the unit's needs within the national perspective of the committee.

The Director FPM/WO shall:

- coordinate the report **recommendations** within WO, and with the Regions, NA, and Stations as appropriate.

- review the steering committee **recommendations** and resultant FPM project proposals for funding.

- give strong consideration to the steering committees **recommendations** in prioritizing project proposals for funding.

- complete project approval and funding by January for projects funded by FPM.

COMMITTEE MEMBERS

(List Current as of August 1991)

MAILING LIST DISPLAY

Mailing list name: gypsy moth
Accessibility: Owner
Visibility: Local

Addresses on this mailing list:

N.Schneeberger:S24L08A
H.Yates:S29L01A
J.R.Bridges:W01C
M.McManus:S24L07A
S.Munson:S22L02A
T.Hofacker:W01C
D.Bridgwater:R06C
H.Flake:R08a
J.Barry:SCS06
M.Frank:S24L06A
R.Reardon:S24L08A
D.Rising:R01A
J.Witcosky:S29A

----------X----------

Win McLane
USDA-APHIS
Otis Methods Development Center
Otis Air National Guard Base
Massachusetts 02542

(617)563-9303
FAX (508)564-4398
FTS 828-9354

Tony Chiotakis
Department of Agriculture
P.O. Box 27647
Raleigh, NC 27611

(919)733-2483
FAX (919)733-1041

Leo Cadogen & John Cunningham
Forest Pest Management Institute
P.O. Box 490
Sault Ste. Marie, Ontario
CANADA P6A 5M7

(705)949-9461
FAX (705)759-5700

Barry Towers
Forest Pest Management
Bureau of Forestry
34 Airport Drive
Middleton, PA 17057-5080

(717)948-3941
FAX (717)948-3957

Proposed (subject to Regions and Area concurrences) additions to the committee:

- Bob Wolfe, NA
- Dave Bridgewater, R-6
- R-8 (another to be named)
- Ernie Able - Michigan

MAILING LIST DISPLAY

Mailing list name: seed and cone
Accessibility: Owner
Visibility: Local

Addresses on this mailing list:

J.Dewey:R01A
R.Sandquist:R06C
L.Barber:S29A
M.Haverty:S27A
J.Barry:SCS06
J.R.Bridges:W01C
R.Overton:S23A
J.Dale:R05A
A.Mangini:R08F06A
J.W.Taylor:R08A
C.Niwa:S26L05A
G.Debarr:S29L01A
T.Hofacker:W01C
S.Katovich:S23A
D.Rising:R01A

----------X----------

Wayne Dixon
Division of Forestry
P.O. Box 1269
Gainesville, FL 32602

904-372-3505
FAX 904-372-2501

Tim Schowalter
Dept. of Entomology
Oregon State University
Corvallis, OR 97331

503-737-5511 or 5633
FAX 505-646-6096

Dave Overhulser
Department of Forestry
State of Oregon
2600 State Street
Salem, OR 97310

503-378-2218
FAX 503-363-0754

Scott Cameron
Texas Forest Service
P.O. Box 310
Lufkin, TX 75901

409-639-8170
FAX 409-639-8185

Peter deGroot & Dr. Kees VanFrankenheyzen
Forest Pest Management Institute
P.O. Box 490
Sault Ste. Marie, Ontario
P6A 5M7

705-949-9461
FAX 705-759-5700

Charles Masters
Weyerhaeuser Company
505 N. Pearl Street
Centralia, WA 98531

206-736-8241
FAX 206-736-8241 Ext. 276

MAILING LIST DISPLAY

Mailing list name: veg mgt
Accessibility: Owner
Visibility: Local

Addresses on this mailing list:

B.Edwards:S29L02A
F.Shon:R06C
J.Barry:SCS06
P.Aune:S27L04A
C.Mcmahon:S30a
D.Thomas:R05F03A
E.Monnig:R01A
G.Baxter:R04A
M.Rutty:R05F16A
P.Mistretta:R08A
D.Stone:S23102a
D.Rising:R01A

----------X----------

Ellis Huddleston
Department of Entomology
New Mexico State University
Las Cruces, NM 88003

505-646-3934
FAX 505-646-5975

Doug Pitt
Forest Pest Management Institute
P.O. Box 490
Sault Ste. Marie, Ontario
P6A 5M7

705-949-9461
FAX 705-759-5700

Dr. Robert Campbell
Forestry Canada
Forest Pest Management Institute
P.O. Box 490
Sault Ste. Marie, Ontario
P6A 5M7

705-949-9461
FAX 705-759-5700

George Ice
National Council of the Industry
for Air & Stream Improvement
P.O. Box 458
Corvallis, OR 97339

503-752-8801
FAX 503-752-8806

MAILING LIST DISPLAY

Mailing list name: western defoliators
Accessibility: Owner
Visibility: Local

Addresses on this mailing list:

D.Bennett:RO3A
B.Hostetler:RO6C
J.Cota:WO1C
J.R.Bridges:WO1C
J.Wenz:RO5F16A
L.Stipe:RO1A
T.Hofacker:WO1C
G.Daterman:S26LO5A
J.Barry:SCSO6
J.Hadfield:R6/PNW
J.Weatherby:RO4FO2A
IDL.BPF:RO1FO4A
P.Shea:SCSO6
D.Rising:RO1A

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John Cunningham &/or Kees van Frankenhuyzen
Forest Pest Management Institute
P.O. Box 490
Sault Ste. Marie, Ontario
P6A 5M7

705-949-9461
FAX 705-759-5700

Ladd Livingston
State of Idaho
Department of Public Lands
P.O. Box 670
Coeur D'Alene, ID 83814

208-664-2127
FAX 208-664-3840